October 2008

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Farnell

Test & Measurement SPECIAL

Tektronix
Enabling Innovation

TDS1000B and TDS2000B Oscilloscopes

SAVE UP TO 12%

See page 3

LeCroy

WaveJet Oscilloscopes

Buy 3 and receive a 4th FREE!!

See page 4

Agilent Technologies

Function Generators

NEW ADDITIONS

See page 8

FLUKE

Test Tools

SAVE UP TO 15%

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pico Technology Limited

Datalogging Systems

MASSIVE SAVINGS

See page 8

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Dual Channel Digital Thermometers

TENMA

New

Models: 72-7712, 72-7715
Dual channel digital thermometers with backlit LCD displays and multiple probe type compatibility.

- 4 Digit LCD diplay with dual readings and backlight
- °C/°F/°K measurements
- Dual probe inputs
- K, J, T and E type probe compatibility
- Max/Min/Dif/Avg temperature display with hold function
- Sleep mode and low battery warning
- USB data transfer and datalogging (software supplied)
- USB or 9V battery Power
- Supplied with 9V battery, software, USB lead, K type probe and user manual

72-7715 Additional Features
- Hi/Lo alarm and signal output
- User self-calibration
- Additional R, S and N type probe compatibility

Mfrs. List No.	Order Code	Price Each 1+	Price Each 5+
72-7712	156-3717	£45.28	£44.83
72-7715	156-3718	£52.75	£52.22

Infrared Non Contact Thermometer

TENMA

New

Model: 72-820
A general purpose infrared, non-contact thermometer with adjustable emissivity. Simply target the unit using the built-in laser pointer and squeeze the trigger to take fast and accurate surface temperature measurements.

Range	-18°C to +550°C
Accuracy	±1.8%
Resolution	0.1°C
Repeatability	±0.5%
Emissivity	0.10 to 1.00
Responce Time	250ms
LCD size (WxH)	29x32mm
Dimensions (WxHxD)	53x169x138mm
Weight	270g

- 4 Digit LCD with backlight
- °C/°F measurements
- 12:1 distance to spot ratio
- Max/Min/Dif/Avg temperature display with hold function
- Sleep mode and low battery warning
- USB or 9V battery power
- Tripod mount
- Supplied with 9V battery, carry bag, USB lead and user manual

Description	Order Code	Price Each 1+	Price Each 5+
Infrared Thermometer	156-3715	£35.00	£34.65

Digital Storage Oscilloscopes

TDS1000B and 2000B Series

Tektronix

SAVE UP TO 12%

LATEST PRICING

W=326 H=158 D=229mm Weight = 2kg

An unbeatable combination of performance and ease-of-use, at a price you can afford. Up to 200 MHz bandwidth and 2 GS/s maximum sample rate. The TDS1000B and TDS2000B Series oscilloscopes provide accurate real-time acquisition up to their full bandwidth, the same record length at all time base settings, advanced triggers to isolate signals of interest, and 11 standard automatic measurements on all models. Their Fast Fourier Transform (FFT) and waveform add, subtract, and multiply math functions allow you to analyze, characterize, and troubleshoot circuits.

The simple user interface with classic analogue-style controls makes these instruments easy to use, reducing learning time and increasing efficiency. With USB host and device ports which enable removable data storage, seamless PC connectivity, and direct printing, no other digital storage oscilloscope offers as much flexibility and ease of data transfer for the price.

Easily capture, save and analyse measurement results with OpenChoice PC Communications Software (freely downloadable from the Tektronix website). Simply pull screen images and waveform data into the stand-alone desktop application or directly into Microsoft Word and Excel.

- 40 MHz, 60 MHz, 100 MHz, and 200 MHz bandwidths
- Sample rates up to 2 GS/s
- 2 or 4 channels
- Colour or monochrome LCD display
- Removable data storage via front panel USB port
- Seamless PC connectivity via USB device port
- Advanced triggers, including pulse width trigger and line-selectable video trigger
- FFT function standard on all models
- 11 Automatic Measurements
- Multi-language user interface and context-sensitive help
- Direct printing to PictBridge® compatible printers via USB device port

	TDS1001B	1002B	1012B	2002B	2004B	2012B	2014B	2022B	2024B
Display	Mono	Mono	Mono	Colour	Colour	Colour	Colour	Colour	Colour
Mono Display	1/4 VGA backlit passive LCD with adjustable contrast and inverse video								
Colour Display	1/4 VGA passive colour LCD on black background with adjustable contrast								
Bandwidth	40MHz	60MHz	100MHz	60MHz	60MHz	100MHz	100MHz	200MHz	200MHz
Channels	2	2	2	2	4	2	4	2	4
Sample rate	500 MS/s	1 Gs/s	1 Gs/s	1 Gs/s	1 GS/s	1 Gs/s	1 Gs/s	2 Gs/s	2 Gs/s
Record length	2.5k points on all models								
Vertical res.	8-bits								
Vertical sens.	2 mV to 5 V/div								
DC vert. acc.	±3%								
Vertical zoom	Vertically expand or compress a live or stopped waveform								
Max input volt.	300 Vrms CAT II; derated at 20 dB/decade >100kHz to 13 Vp-p AC at ≥3MHz								
Position range	2mV to 200mV/div ±2V; >200mV to 5V/div ±50V								
BW limit	20 MHz								
Input coupling	AC, DC, GND								
Input impedance	1MΩ in parallel with 20pF								
Time base range	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div	5ns to 50s/div	2.5ns to 50s/div	2.5ns to 50s/div
Time base acc.	50 ppm								
Horizontal zoom	Horizontally expand or compress a live or stopped waveform								
Operating temp	0 to +50°C								

Prices where indicated by a ↕ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524762

Description	Mftrs. List No.	Order Code	Price Each 1+
TDS1001B	40 MHz, 2 Channel, Mono	**122-5083**	£502.00
TDS1002B	60 MHz, 2 Channel, Mono	**122-5084**	£600.00
TDS1012B	100 MHz, 2 Channel, Mono	**122-5085**	£719.00
TDS2002B	60 MHz, 2 Channel, Colour	**122-5086**	£719.00
TDS2004B	60 MHz, 4 Channel, Colour	**122-5087**	£940.00
TDS2012B	100 MHz, 2 Channel, Colour	**122-5088**	£898.00
TDS2014B	100 MHz, 4 Channel, Colour	**122-5089**	£1,135.00
TDS2022B	200 MHz, 2 Channel, Colour	**122-5090**	£1,080.00
TDS2024B	200 MHz, 4 Channel, Colour	**122-5092**	£1,310.00
Accessories			
RM2000	Rack mount kit	**393-3520**	£162.00
TEK-USB-488	GPIB to USB Converter	**129-5623**	£392.00
AC2100	Soft carry case	**798-4243**	£59.00
HCTEK4321	Hard Carry Case	**129-5624**	£369.00
RM2000B	Rack Mount Kit	**129-5625**	£194.00
TNGTDS01	Operator Training Kit	**129-5626**	£217.00
SIGEXPTE	Signal Express Software	**129-5628**	£433.00
			Price Each
Standard Calibration Charge		S C18	£86.25
UKAS Calibration Charge		N C18	£118.84

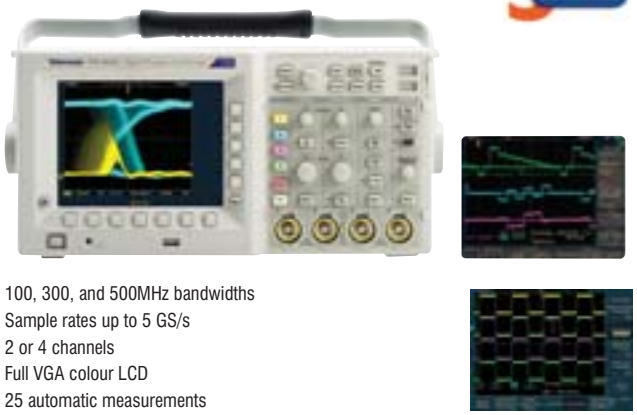
TDS3000C Series Digital Phosphor Oscilloscopes

With USB Storage Capabilities

New

LATEST PRICING

Tektronix 3 YEAR GUARANTEE



- 100, 300, and 500MHz bandwidths
- Sample rates up to 5 GS/s
- 2 or 4 channels
- Full VGA colour LCD
- 25 automatic measurements
- 9-bit vertical resolution
- Multi-language User Interface
- QuickMenu Graphical User Interface for Easy Operation
- Built-in Ethernet Port
- e*Scope™ Web-based Remote Control
- WaveAlert™ Automatic Waveform Anomaly Detection
- Timebase accuracy 20ppm
- FFT and extended triggering functions
- Logic pattern, State, edge delay, runt pulse and slew rate advanced triggering functions

The TDS3000C Series oscilloscope offers digital phosphor waveform acquisition technology, automatic anomaly detection, web-based remote control and 7 application-specific modules into a lightweight, battery-capable design.The new 3000C Series comes equipped with a USB host port so you can easily store and transfer measurement information to your PC.

The Series offers a host of features aimed at users doing the hands-on work of electronic design, production, and maintenance, including WaveAlert™ Waveform Anomaly Detection, which automatically detects anomalous waveforms. WaveAlert makes it easy to detect, display and capture events that fall outside the normal repetitive patterns of waveform activity and can also be programmed to beep, then stop acquisition and freeze the anomaly on the screen, save the anomalous wave to a USB memory stick, or print a hardcopy of it.

The e*Scope™ web-based remote control capability enables remote instrument control via Internet browser, as well as information sharing and monitoring. The e*Scope web-based remote control feature facilitates contact with service technicians at customer sites, remote control by distributed engineering teams. A built-in Ethernet connection is also provided.

Accessories

TDSPCS1 OpenChoice Software

Software for providing a simple and powerful interface between the oscilloscope and PC, allows the user to import and manipulate data captured though the scope.

TDS3GV Communications Module + OpenChoice

Offers GPIB, VGA and RS-232 interfaces and supplied with OpenChoice software

P6243 1GHz Active Probe

1.3m 1 GHz Active probe for use with TDS3064, to enhance the features of the oscilloscope

Order Code	1554155	1554156	1554157	1554158	1554159	1554160
Mftrs. List No.	TDS3012C	TDS3054C	TDS3032C	TDS3034C	TDS3052C	TDS3054C
Bandwidth	100MHz	500MHz	300MHz	300MHz	500MHz	500MHz
Channels	2	4	2	4	2	4
Sample rate per chan.	1.25GS/s	5GS/s	2.5GS/s	2.5GS/s	5GS/s	5GS/s
Time base	4ns-20s	1ns-20s	2ns-10s	2ns-20s	1ns-20s	1ns-20s
Time base accuracy	20ppm	20ppm	20ppm	20ppm	20ppm	20ppm
BW limit	20MHz	20MHz	20, 150MHz	20, 150MHz	20, 150MHz	20, 150MHz

Maximum Record Length	10K points on all models
Vertical resolution	9-bits on all models
Vertical Sensitivity/div	1mV-10V on all models
Vertical accuracy	+/-2% on all models *1
Max. Input Voltage(1MR)	150 Vrms CAT I on all models (300 V CAT II with standard 10X probe)
Position range	± 5 div on all models
Input coupling	AC, DC, GND on all models
Input Impedance select.	1 MΩ in parallel with 13 pF or 50Ω
Display monitor	Colour LCD

For full specification please contact our data department

Prices where indicated by a ↕ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

Quantity break discounts available, please contact us

524763

Description	Calibration	Mftrs. List No.	Order Code	Price Each 1+
Oscilloscopes				
100MHz, 2Ch	SC18 / NC18	TDS3012C	**155-4155**	£2,640.00
100MHz, 4Ch	SC18 / NC18	TDS3014C	**155-4156**	£3,130.00
300MHz, 2Ch	SC18 / NC18	TDS3032C	**155-4157**	£3,780.00
300MHz, 4Ch	SC20 / NC20	TDS3034C	**155-4158**	£4,560.00
500MHz, 2Ch	SC20 / NC20	TDS3052C	**155-4159**	£5,460.00
500MHz, 4Ch	SC20 / NC20	TDS3054C	**155-4160**	£6,510.00
Accessories				
OpenChoice Software		TDSPCS1	**466-4474**	£90.00
Comms+Openchoice		TDS3GV	**369-3880**	£295.00
1GHz Active Probe		P6243	**207-433**	£525.00
				Price Each
Standard Calibration Charge			S C20	£105.10
UKAS Calibration Charge			N C18	£118.84
UKAS Calibration Charge			N C20	£124.06

Tektronix Oscilloscope & Digital Multimeter

***Save up to 24% when purchased together**

A very popular Oscilloscope and Digital Multi Meter package combinded.

The TDS2000B Series digital storage oscilloscopes deliver an unbeatable combination of performance and ease-of-use at a price you can afford.

The Fluke 289 & 287 represent the next generation of high performance industrial logging multimeters, including higher accuracy and greater troubleshooting convenience than ever before.

524764

Mftrs. List No.	Order Code	Price Each 1+
TDS2004+287	**152-6451**	£1,085.79
TDS2014+289	**152-6452**	£1,280.70
TDS2024+289	**152-6453**	£1,498.20
TDS2024+289/FVF	**152-6454**	£1,891.74

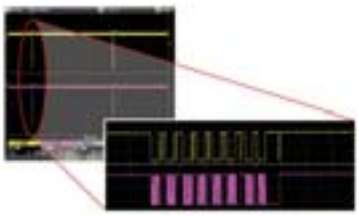
Digital Oscilloscopes - WaveJet Series

***Buy 3 get the 4th one Free**

Exclusive offer

LATEST PRICING

W=285mm H=190mm D=102mm. Weight 3.2kg



The WaveJet 300 Series features unmatched performance and debugging tools not usually found in low bandwidth portable oscilloscopes. Engineers can simplify and shorten their debugging process with the Replay feature and long capture time not available in other oscilloscopes with 100 MHz bandwidths. On top of great performance and capabilities the WaveJet is lightweight and portable, it is only 4" deep and features a large 7.5" colour display.

- 100 MHz - 500 MHz Bandwidth
- 2 or 4 channels
- Single shot sampling rate up to 2 GS/s
- 7.5" LCD Display
- Replay feature allows users to look back in time and view rare events such as runts and glitches
- 500kPts standard memory allows long periods to be captured, even at high sampling rates
- Save time with 26 automatic measurements
- Waveform maths and FFT as standard
- Save captured wavefroms and settings to internal memory or USB memory device
- Capture glitches as small as 1ns with peak detect mode
- 100 GS/s sampling rate with equivalent time mode
- Built in 6-digit frequency counter
- 3 year guarantee and 7 years technical support

Model No.	WAVEJET WJ312	WAVEJET WJ324	WAVEJET WJ334
Order Code	**113-2564**	**113-2567**	**113-2571**
Channels	2	4	4
Bandwidth	100MHz	200MHz	350MHz
Sample rate	1 GS/s	2GS/s	
Rise Time	3.5 ns	1.75 ns	1 ns
Memory Length	500 kpts/ch		
Display Monitor	7.5" colour flat-panel TFT-LCD (640x480 SVGA)		
Vert. resolution	8 bit		
Vert. Sensitivity/div	2mV/div - 10V/div		2mV/div - 10V/div
Vert. accuracy	+/- (1.5% + 0.5% of full scale)		
Max. Input Voltage	400V CAT I		
Input Coupling	GND, DC (1MΩ), AC (1MΩ)		GND, DC (1MΩ), AC (1MΩ), DC (50Ω)
Input Impedance	1MΩ ±1.5% / 20pF		1MΩ ±1.5% / 16pF ±1.5%
Time base range/div	5ns/div - 50s/div	2ns/div - 50s/div	1ns/div - 50s/div
Time base accuracy	10 ppm		

524765

	Mftrs. List No.	Order Code	Price for 3 - the 4th is FREE
100MHz, 4 ch	WAVEJET WJ314	**160-5819**	£5,550.00
200MHz, 4 ch	WAVEJET WJ324	**160-5820**	£7,200.00
350MHz, 4 ch	WAVEJET WJ334	**160-5821**	£10,710.00

Digital Oscilloscope

LeCroy WaveAce

New

Long Memory

Key Features:

- Simple to use with auto set-up
- Easyscope remote control software included
- Unique waveform sequence recorder
- Pass/Fail testing
- 5.7" colour display with zoom on all models
- 60 MHz, 100 MHz, 200 MHz and 300 MHz B/W
- Sample rates up to 2 GS/s
- Long Waveform Memory - 4 kpts/Ch and 8 kpts/Ch configurations
- Advanced Triggering - Edge, Width, Video, Rise Time
- 32 automatic measurements
- Multi-language User Interface and Context Sensitive Help
- Large internal waveform and setup storage
- 4 math functions plus FFT
- USB host and device connections for printers, memory sticks and PC remote control

Mask Test

Math

Parameter

Model No.	102	112	202	212	222	232
Order Code	**163-3307**	**163-3308**	**163-3309**	**163-3310**	**163-3311**	**163-3312**
Input Channels	2					
Bandwidth	60 MHz	100 MHz	60 MHz	100 MHz	200 MHz	300 MHz
Rise Time	5.8 ns	3.5 ns	5.8 ns	3.5 ns	1.75 ns	1.2 ns
Input Coupling	1 MΩ " 13 pF				1 MΩ " 13 pF, 50 Ω	
Display	5.7" Color, 320 x 240 resolution					
Sample rate (Equivalent Time)	50 GS/s					
Peak Detect Period	10 ns					
Memory Length	4 kpts/Ch		9 kpts/Ch			
Vertical Resolution	8 bits					
Vertical Sensitivity	2 mV/div-5 V/div Bandwidth Limiting					
Bandwidth Limiting Filter	20 MHz					
Maximum Input Voltage	400 V CAT II					
Probes	10:1, 1:1 Switchable Passive Probe (one per channel)					
Timebase Range	5 ns/div-50 s/div		2.5 ns/div-50 s/div			

524766

Mftrs. List No.	Order Code	Price Each 1+
WAVEACE 102	**163-3307**	£620.00
WAVEACE 112	**163-3308**	£770.00
WAVEACE 202	**163-3309**	£770.00
WAVEACE 212	**163-3310**	£957.00
WAVEACE 222	**163-3311**	£1,160.00
WAVEACE 232	**163-3312**	£1,827.00

Colour Digital Storage Oscilloscopes

New

High performance, 2 channel digital storage oscilloscopes that are an ideal replacement for upgrade for analogue scopes in service, quality testing, repair and education environments.

- 5.7" (320x240) Colour LCD display
- 500MS/s Real time or 25GS/s ET sampling rate
- Long memory - 1Mb (2x 512k) length, 2 x 25K depth
- FFT, ADD, SUB, MULT, DIV and REV maths functions
- Extensive cursor measurements
- Storage for 10 x settings
- USB and RS232 interface for extended analysis
- Supplied with 2 x probes and user manual

	U-T2042C	U-T2062C	U-T2102C
Bandwidth	DC-40MHz	DC-60MHz	DC-100MHz
Rise Time	<8.7ns	<5.8ns	<3.5ns
Time Base	10ns/div	10ns/div	5ns/div to 50s/div

	U-T2152C	U-T2202C
Bandwidth	DC-150MHz	DC-200MHz
Rise Time	<2.3ns	<1.8ns
Time Base	2ns/div to 50s/div	2ns/div to 50s/div

Sample Rate	500MS/s	Vertical Resolution	8 bits
Rise Time	<14ns	Vertical Sensitivity	2mV/div to 5V/div
Triggers	Edge, Pulse, Glitch, Video and Alternate + EXT	Waveform Storage	10
		Dimensions (WxHxD)	320x150x130mm
Input Voltage	400V max	Weight	2.5Kg

524774

Mftrs. List No.	Order Code	Price Each 1+
UT-2042C	156-3728	£399.00

30MHz Oscilloscope with Frequency Counter

TENMA

Model: 72-6802
A great value analogue oscilloscope with innovative functions such as LCD readout display, frequency counter, auto time base setting. The Scope also features a wide range of triggering functions, XY mode, MAG and Z Axis. Ideal for R&D, service, maintenance and education environments.

- 6" high brightness CRT screen with 8x12 internal graticule
- LCD readout with backlight showing voltage, time base and frequency
- 5 Digit, real time 30MHz frequency counter
- Intelligent auto time base
- Horiz/Vert limit buzzer alarm
- Supplied with probes ans a user manual

Vertical System	
Operating Modes	CH1, CH2, DUAL, ADD, X-Y
Input Voltage	300V (DC + AC peak)
Sensitivity	1mV/div sesctable in 12 steps
Bandwidth	DC to 30MHz
Rise Time	11.7ns
Input Impedance	1MΩ
Coupling	AC, DC, GND
Horizontal System	
Sweep Time	0.2µs to 0.5s/div in 20 steps
Triggering	
Modes	Auto, norm, TV-v, TV-h
Sources	CH1, CH2, ALT, Line, Ext
Slope	'+' or '-'
Function Counter	
Frequency Range	50Hz to 30MHz
Measuring sensitivity	2div
Dimensions (WxHxD)	310 x 146 x 458mm

New

524775

Order Code	Price Each 1+
156-3801	£219.30

25MHz Digital Storage Oscilloscope

New

- 5.7" (320x240) mono LCD display
- 500MS/s Real time or 25GS/s ET sampling rate
- Long memory - 1Mb (2x 512k) length, 2 x 25K depth
- FFT, ADD, SUB, MULT, DIV and REV maths functions
- Extensive cursor measurements
- Storage for 10 x settings
- USB and RS232 interface for extended analysis
- Supplied with 2 x probes and user manual

A great value, high performance, 2 channel digital storage oscilloscope that is an ideal replacement or upgrade for analogue scopes in service, quality testing, repair and education environments.

Bandwidth	DC-25MHz	Vertical Resolution	8 bits
Sample Rate	500MS/s	Vertical Sensitivity	2mV/div to 5V/div
Rise Time	<14ns	Time Base Range	10ns/div to 50s/div
Triggers	Edge, Pulse, Glitch, Video and Alternate + EXT	Waveform Storage	10
		Dimensions (WxHxD)	320x150x130mm
Input Voltage	400V max	Weight	2.5Kg

524777

Discription	Order Code	Price Each 1+
	156-3727	£299.00

Function Generator

GW INSTEK

New

Model: SFG-1013
A great value DDS Function generator with voltage display with a high accuracy and high stability output. The waveform synthesis is based on DDS technology and output waveforms include sine, square, triangle and TTL types.

- 6 Digit LED display
- DDS Technology and FPGA design
- 0.1Hz to 3MHz frequency range
- Sine, Square, Triangle and TTL output
- High frequency accuracy and stability (+-20ppm)
- Voltage display

Freq range (Sine, square)	0.1Hz to 3MHz
Freq range (Triangle)	0.1Hz - 1MHz
Resolution	0.1Hz
Accuracy	±20ppm
Display	6 digits LED display
	-55dBc, 0.1Hz-200kHz;
	-40dBc, 0.2MHz-2MHz
	-35dBc, 2MHz-3MHz
Triangle wave	>98%, 0.1Hz - 100kHz; >95%, 100kHz - 1MHz
Square wave	5% of period +4ns to 0.1Hz -100kHz
TTL output	>3Vpp; Fan out - 20 TTL load
Power	AC 240V, 220V, 110V ±10%, 50/60Hz
Dimensions (WxHxD)	251x 91x 291mm
Weight	2.1kg

524778

Description	Order Code	Price Each 1+
Function Generator	156-3805	£105.00

USB Oscilloscope

Modular

Agilent Technologies

H = 41, W = 117, D = 180mm.

New

The U2701A and U2702A Oscilloscopes are bundled with the user-friendly Agilent Modular Instrument Measurement Manager software which offers a simple interface for quick setup, configuration and measurement control. These ocsilloscopes are compatible with:

LATEST PRICING

- Agilent VEE and Agilent T & M Toolkit
- Microsoft Visual Studio, NET, C/C++ and Visual Basic 6
- LabVIEW
- MATLAB®

- 2 channels (simultaneous sampling)
- 100MHz and 200MHz models
- Bundled software includes basic spectrum analysis (FFT, peak search, next peak)
- Up to 1GSa/s maximum sample rate
- Up to 32Mpts memory depth
- Advance triggering including edge, pulse width and TV
- Hi-Speed USB 2.0 TMC 488.2 standards
- Four maths functions, including FFT's standard
- DUAL-PLAY - Standalone and modular capability

524779

Bandwidth	Mftrs. List No.	Order Code	Price Each 1+
100MHz	U2701A	**157-7812**	£710.00
200MHz	U2702A	**157-7813**	£875.00
Accessories			
Case	U2781A	**129-7812**	£633.00
Cable, BNC	U2921A-100	**157-9661**	£10.40
Cable, Secure USB, 2m	U2921A-101	**157-9662**	£10.40
Probe, Passive 1:1 20MHz	10070C	**157-9663**	£96.70
Probe, Passive 10:1 150MHz (U2701A)	N2862A	**157-9664**	£56.99
Probe, Passive 10:1 300MHz (U2702A)	N2863A	**157-9665**	£74.83

USB Switch Matrix

Agilent Technologies

Modular

H = 41, W = 117, D = 180mm.

New

The U2751A USB modular switch matrix offers a high-quality switching solution for automated testing. It has 32 two-wire cross points organized in a four row by eight column configuration. This enables connection with any combination of rows and columns, including multiple channels at the same time.
The switch matrix offers flexible connection paths between the Device Under Test (DUT) and the test equipment, allowing different instruments to be connected to multiple points on the DUT at the same time. The unit is bundled with the Agilent Measurement Manager (AMM) software.
The U2922A Terminal Block has screw-type terminals which offer a convenient and simple way of making connection to the Switch Matrix for prototyping applications or system deployment.
The Switch Matrix is compatible with:

- Agilent VEE and Agilent T & M Toolkit
- Microsoft Visual Studio, NET, C/C++ and Visual Basic 6
- LabVIEW
- MATLAB®

LATEST PRICING

- 32 two-wire cross points in 4x8 configuration
- Bandwidth of 45MHz
- Minimal cross talk up to 45MHz
- Relay cycle counter
- Flexible connection configurations - Multiple closed channels simultaneously
- Command logger function
- Connect via high speed USB2.0 (480 Mbps)
- Standalone and modular
- SCPI and IVI-COM supported
- USBTMC 488.2 standards

524780

Bandwidth	Mftrs. List No.	Order Code	Price Each 1+
USB Switch Matrix	U2751A	**157-7814**	£500.00
Accessories			
Case	U2781A	**129-7812**	£633.00
Terminal Block - 32 Channel	U2922A	**157-7816**	£83.31
Cable, Secure USB, 2m	U2921A-101	**157-9662**	£10.40

USB Three Channel Source Measure Unit

Agilent Technologies

4 Quadrant Operation

New

H = 66, W = 120, D = 183mm.

- Four-quadrant operation
- 3 Channels
- 16 bits resolution across all current and voltage range
- 100pA resolution @ 1 uA range
- Hi-Speed USB 2.0 TMC488.2 compliance
- Connect via USB 2.0 - High speed (480Mbps)

The U2722A SMU is a versatile device that allows sweep and measurement from different operating regions with just a single device without extra configurations. The 4 quadrant-operation (±20 V) makes the device well suited for a wide range of test applications including leakage measurement, solar cell management. forward/reverse voltage curve tracer and many others. Thee U2722A offers high measurement sensitivity with 16-bit resolution and accuracy that enables accurate analysis and measurement results.
The USB 2.0 interface provides connectivity and setup that allows automatic detection of the device. With quick and easy USB connectivity the U2722A is simple enough for R & D applications but robust and versatile enough for electronic functional test applications. The USBTMC 488.2 standard makes the U2722A compatible with any system that is provided with USB ports.
The SMU is compatible with:

- Agilent VEE and Agilent T & M Toolkit
- Microsoft Visual Studio, NET, C/C++ and Visual Basic 6
- LabVIEW
- MATLAB®

LATEST PRICING

524781

Mftrs. List No.	Mftrs. List No.	Order Code	Price Each 1+
Source Measure Unit (SMU)	U2722A	**157-7811**	£1,156.00
Accessories			
Case	U2781A	**129-7812**	£633.00
Cable, Secure USB, 2m	U2921A-101	**157-9662**	£10.40

USB Function Generator

Agilent Technologies

Modular

H = 41, W = 117, D = 180mm.

New

The U2761A adopts the latest Direct Digital Synthesis (DDS) technology that digitally creates arbitrary waveforms and frequencies from a single and fixed frequency source. DDS offers the precision of digitally controlled logic, thus reducing the complexity of the generator while increasing the stability. This strategy produces a stable, accurate output signal for clean, low distortion sine waves with fast rise and fall time up to 20 MHz and linear ramp waves up to 200kHz.
The U2761A is compatible with:

- Agilent VEE and Agilent T & M Toolkit
- Microsoft Visual Studio, NET, C/C++ and Visual Basic 6
- LabVIEW
- MATLAB®

LATEST PRICING

- Sine, Square, Pulse, Ramp, Triangle, DC and Arbitrary Waveform Generation
- AM, FM, PM, ASK, FSK, PSK, sweep
- 20 MHz Sine and Square waveforms
- Pulse, Ramp, Triangle and DC waveforms
- 14-bit, 50 MSa/s, 64 K-point Arbitrary waveforms
- Linear & logarithmic sweeps
- 40 mVpp to 5 Vpp amplitude range (into 50W)
- Hi-Speed USB 2.0 TMC 488.2 standards
- Arbitrary waveform editor
- Command logger function
- Includes software bundle

524782

Bandwidth	Mftrs. List No.	Order Code	Price Each 1+
Function Generator	U2761A	**157-7817**	£881.00
Accessories			
Case	U2781A	**129-7812**	£633.00
Cable, BNC	U2921A-100	**157-9661**	£10.40
Cable, Secure USB, 2m	U2921A-101	**157-9662**	£10.40

DC Lab Power Supplies

TTi

PL Series

SAVE UP TO 20%

- Linear regulation for optimum output noise and transient response
- Ultra compact dimensions for minimum bench or rack space
- True analogue controls for simplicity of operation
- Advanced digitally based feature set including V-Span and S-Lock
- **S-Lock** - digitally locks voltage and current settings at the touch of a button
- **V-Span** - enables the full 300° rotation of the voltage control to cover any, user-defined, voltage range

The **PL303QMD** is a dual output power supply with four modes of operation:

- **Independent Mode:** The two outputs are completely independent and electrically isolated from each other.
- **Isolated Tracking Mode:** The two outputs remain electrically isolated, but the voltage control of the Master output sets an identical voltage on the Slave output.
- **Isolated Ratio Tracking Mode:** As normal tracking, but the Slave voltage can be set to any percentage of the Master voltage and retains that ratio as the Master voltage is varied.
- **True Parallel Mode:** All of the power is channelled to the Master output which can then supply up to 6 amps.

Model	PL303	PL155	PL601	PL303QMD
Voltage Range	0 to 30V	0 to 15V	0 to 60V	0 to 30V (dual)
Current Range	0 to 3A	0 to 5A	0 to 1.5A	0 to 3A (dual)
Power Rating	90W	75W	90W	180W
Ripple & Noise	<0.4mVrms, <2mVpk-pk / <0.2mArms			
Load Regulation	Voltage - <0.01% + 2mV / Current - typically 0.01% + 500µA			
Line Regulation	Voltage - <0.01% + 2mV for 10% line change Current - <0.01% + 250µA for 10% line change			
Transient Response	<50µs to within 50mV for a 90% load change			
Temperature Coefficient	Typical: <(50ppm + 0.5mV)/°C / <(100ppm + 1mA)/°C			
Meter Accuracy	Voltage ±(0.1%rdg + 10mV), Current ±(0.3% + 3mA)			
Weight	5.2kg	5.2kg	5.2kg	10kg

524784

Mftrs. List No.	Order Code	Price Each 1+	Price Each 3+
PL303	**151-0521**	£208.00	£205.92
PL155	**151-0522**	£208.00	£205.92
PL601	**151-0523**	£208.00	£205.92
PL303QMD	**151-0524**	£520.00	£488.96

		Price Each
Standard Calibration Charge	S C8	£45.13
UKAS Calibration Charge	N C8	£71.21

0-20V 0-20A Power Supply

EX2020R

W=140 H=160 D=320mm

A constant voltage or constant current output power supply with separate 14mm, 4 digit meters for voltage and current.

- Switchable remote or local sensing
- Coarse and fine controls for voltage output adjustment and a single logarithmic control for the current output
- Uses fan blown cooling
- Power input is 230V AC - 800VA maximum
- Weight: 3.6kg

SAVE UP TO 20%

Voltage Range	0 to 20V
Current Range	0 to 20A
Output Protection	Will withstand forward voltages to 25V
Ripple & Noise	Typically <2mVrms, <20mVpk-pk (CV mode)
Meter Accuracy	Voltage 0.3% ±2 digit, Current 0.6% ±2 digit
Weight	3.6kg

524785

Mftrs. List No.	Order Code	Price Each 1+	3+
EX2020R	**151-0525**	£328.00	£324.72
			Price Each
Standard Calibration Charge		S C8	£45.13
UKAS Calibration Charge		N C8	£71.21

0-42V 10A Power Supply

EX4210R

H = 160, W = 140, D = 320 (mm)

A constant coltage or constant current output power supply with separate 14mm, 4 digit meters for voltage and current.

- Switchable remote or local sensing
- Coarse and fine controls for voltage output adjustment and a single logarithmic control for the current output
- Ideal as a test source for the new 42V automotive parts
- Uses fan blown cooling
- Power input is 230V AC - 600VA maximum
- Weight: 3.8kg

SAVE UP TO 20%

Load Regulation	0.01% of maximum output for a 90% load change
Output Impedance	<5mΩ in C.V. mode and < 50kΩ in C.A. mode
Ripple & Noise	Typically <2ms (CV mode)
Transient Response	<200μs to within 50mV of set level for a 90% load change
Meter Accuracy	Voltage 0.3% ±1 digit, Current 0.6% ±1 digit

524951

Mftrs. List No.	Order Code	Price Each 1+	10+
EX4210R	**428-3181**	£328.00	£324.72
			Price Each
Standard Calibration Charge		S C8	£45.13
UKAS Calibration Charge		N C8	£71.21

Power Supply, 30V

Agilent Technologies

New

U8001A

U8002A

- Excellent load and line regulation:(CV: <0.01% +2 mV; CC: <0.02% + 2mA)
- Low output noise: 1 mVrms (20 Hz to 20 MHz)
- Over Voltage and Over Current Protection
- LCD display with backlight capability
- Standby output for safety purposes
- Save-and-recall function up to three memory states
- Security features: keypad lock and physical lock mechanism

Electrical Specifications	U8001A	U8002A
Output Ratings (at 0 °C to 40 °C)	0 to +30 V 0 to 3 A	0 to +30 V 0 to 5 A
Line and Load Regulation	CV: <0.01% +2 mV CC: <0.02% +2 mA	
Ripple and Noise (25 °C ±5 °C)	CV: 12 mVp-p, <1 mVrms; CC: 3 mArms	
Programming Accuracy[1] (25 °C ±5 °C)	<0.35% +20 mV <0.35% +20 mA	
Readback Accuracy[1] (25 °C ±5 ° C)	<0.35% +20 mV <0.35% +20 mA	
Meter Resolution	Voltage: 10 mV Current: 10 mA	
Maximum Output Float Voltage	±240 Vdc	
1 Specifications are based on one hour warm-up period.		
Supplemental Characteristics		
Temperature Coefficient (for 12 months)	CV: <100 ppm/ °C	
	CC: <380 ppm/ °C	CC: <300 ppm/ °C
Protection Features		
Over Voltage Protection Accuracy ± (% of output + offset)	<0.5% +0.5 V	
Over Voltage Protection Programmable Range	1 V to 33 V	
Over Current Protection Programmable Range	1 A to 3.3 A	1 A to 5.5 A
Physical Specifications		
Dimensions (W x H x L)	88.1 mm x 212.3 mm x 394.3 mm	
Weight	7.3 kg	8.3 kg

524787

Mftrs. List No.	Description	Order Code	Price Each 1+
U8001A	POWER SUPPLY, 30V/3A DC, 90W	**163-7311**	£158.00
U8002A	POWER SUPPLY, 30V5A DC, 150W	**163-7312**	£217.00
Accessories			
E3600A-100	TEST LEAD KIT, AGILIENT U8000A	**163-7313**	£8.32
U8001A-1CM	RACK MOUNT KIT, AGILIENT U8000A	**163-7314**	£61.64
U8002A-1CM	RACK MOUNT KIT, AGILIENT U8000A	**163-7315**	£61.65

3GHz Frequency Counter - Handheld

PFM3000

H = 178, W = 81, D = 30

- 3 Hz to > 3000 MHz in two overlapping ranges
- High input sensitivity over the full frequency range
- High impedance measurement up to 125 MHz
- Reciprocal counting technique gives superior resolution
- Period measurement from 3 Hz to 125 MHz
- Battery operation; handheld format with tilt-stand
- Push-to-measure function with auto power-down
- Large 8+ digit display with full range of annunciators
- Selectable measurement time; display hold function
- Noise filter for low frequency measurements

The PFM3000 offers high sensitivity frequency measurement from 3Hz to more than 3GHz in two overlapping ranges. Period measurement is also provided from 8ns to 330ms. The PFM3000 uses a continuous reciprocal measurement technique to provide high resolution at all frequencies with rapid update.

Despite its wide frequency range the PFM3000 has a power consumption that enables it to operate for many hours from a PP3 size battery.A push-to-measure capability gives an instantaneous reading followed by an automatic power down after 15 seconds. This provides greatly extended battery life where continuous monitoring of the signal is not required.

Frequency measurement

	Input A:	Input B:	
Frequency range	3Hz to 125MHz	Frequency range	80MHz to 3000MHz
Resolution	10^{-7}Hz to 100Hz	Resolution	1Hz to 10kHz

Measurement of accuracy is the sum of the timebase accuracy and measurement resolution plus one count.

Period Measurement

Frequency range		5Hz to 25MHz
Resolution		100ns to 1μs
Accuracy		±(1 digit + timebase accuracy)

CALIBRATION SERVICES

Inputs

	Input A:	Input B:	
Input impedance	1MΩ/20pF	Input impedance	50Ω nominal
Sensitivity	Sinewave - 15mVrms	Sensitivity	Sinewave - 15mVrms
	10Hz-125MHz		80MHz-2GHz, 50mVrms to 3GHz
	10Hz to 20MHz		20MHz to 700MHz

Input A and Input B: 30Vdc; 30Vrms 50Hz/60Hz reducing to 1Vrms above 1MHzNote that the inputs will not be damaged if subjected to an accidental short-term connection to a 50/60Hz line voltage not exceeding 250V rms.

Timebase

Crystal oscillator frequency	10MHz
Initial oscillator adjustment error	±2ppm
Oscillator temperature coefficient	Typically less than ±0.3ppm/°C 18°C
Oscillator ageing rate	+5ppm/year

Power Requirements

Internal

Battery type	9V PP3 alkaline
Battery life	Typically 20 hours

General

Operating temperature range	+5°C to +40°C
Operating humidity range	20% RH to 80% RH
Storage temperature range	-20°C to +60°C
Weight	190g

SAVE UP TO 20%

524790

Mftrs. List No.	Order Code	Price Each 1+
PFM3000	**160-1132**	£92.00
Standard Calibration Charge	S C8	Price Each £45.13
	N C8	£71.21

Function Generator, Arbitry

Agilent Technologies

33250A

33210A

- 80 MHz sine and square wave outputs
- Sine, square, ramp, noise and other waveforms
- 50 MHz pulse waveforms with variable rise/fall times
- 12-bit, 200 MSa/s, 64K-point deep arbitrary waveform
- 10 MHz Sine and Square waveforms
- Pulse, Ramp, Triangle, Noise, and DC waveforms
- Optional 14-bit, 50 MSa/s, 8K point Arbitrary Waveform Generator
- AM, FM, and PWM modulation types
- Linear & logarithmic sweeps and burst operation
- 10 mVpp to 10 Vpp amplitude range
- Graph mode for visual verification of signal settings
- Connect via USB, GPIB and LAN
- Fully compliant to LXI Class C specification

New

33250A

Frequency Characteristics

Sine	1 [mu]Hz to 80 MHz
Square	1 µHz to 80 MHz
Pulse	500 µHz to 50 MHz
Arb	1 µHz to 25 MHz
Ramp	1 µHz to 1 MHz
White noise	50 MHz bandwidth
Resolution	1 µHz; except pulse, 5 digits
Accuracy (1 year)	2 ppm, 18°C to 28°C 3 ppm, 0°C to 55°C

General

Power supply	100-240 V, 50-60 Hz 100-127 V, 50-400 Hz
Power consumption	140 VA
Operating temp.	0°C to 55°C
Storage temp.	-30°C to 70°C
Stored states	4 named user configurations
Power on state	default or last
Interface	IEEE-488 and RS-232 std.
Language	SCPI-1997, IEEE-488.2
Dimensions (WxHxD)	
Bench top	254 x 104 x 374 mm
Rackmount	213 x 89 x 348 mm
Weight	4.6 kg
Safety designed to	EN61010-1, CSA1010.1, UL-311-1
EMC tested to	IEC-61326-1 IEC-61000-4-3 criteria B IEC-61000-4-6 criteria B
Vibration and shock	MIL-T-28800E, Type III, Class 5
Acoustic noise	40 dBA

33210A

Waveform Characteristics

Sine frequency range	1 mHz to 10 MHz
Square Frequency range	1 mHz to 10 MHz
Ramp, Triangle Frequency range	1 mHz to 100 kHz
Pulse Frequency range	1 mHz to 5 MHz
Noise Bandwidth	7 MHz typical

General

Power supply	Cat II 100 - 240 V @ 50/60 Hz (-5%, +10%) 100 - 120 V @ 400 Hz (± 10%)
Power consumption	50 VA max
Operating environment	IEC 61010 Pollution Degree 2 Indoor Location
Operating temperature	0°C to 55°C
Operating humidity	5% to 80% RH, non-condensing
Operating altitude	Up to 3000 meters
Storage temperature	-30°C to 70°C
State storage	Power off state automatically saved, Four user-configurable stored states
Interface	LAN LXI-C Ethernet 10/100 USB 2.0, GPIB
Language	SCPI - 1993, IEEE-488.2
Dimensions (W x H x D)	
Bench top	261.1 mm x 103.8 mm x 303.2 mm
Rack mount	212.88 mm x 88.3 mm x 272.3 mm
Weight	3.4 kg (7.5 lbs)
Safety designed to	UL-1244, CSA 1010, EN61010
EMC tested to	MIL-461C, EN55011, EN50082-1
Vibration and shock	MIL-T-28800, Type III, Class 5
Acoustic noise	30 dBa
Warm-up time	1 hour

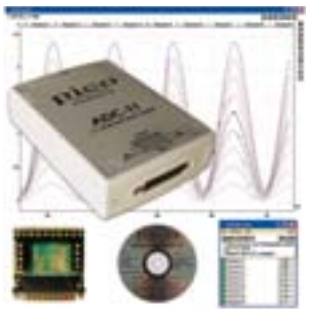
524788

Mftrs. List No.	Order Code	Price Each 1+
33250A	**163-7309**	£2,440.77
33210A	**163-7310**	£638.14

PC Data Acquisition Systems

pico

USB ADC-11 Series



Used with any laptop or PC with a USB port, the USB ADC-11 is a low cost solution for converting voltage signals into digital samples for up to 11 voltages at a time. In addition, the unit has 2 digital outputs which may be used to control devices such as alarms. The USB ADC-11 can be used in conjunction with PicoScope and PicoLog software which enables users to monitor, store and analyse acquired data. In addition, drivers for C, Delphi, Visual Basic, LabVIEW and Agilent VEE are provided for custom programming.
The optional terminal board enables larger voltages to be measured and connection of external sensors including temperature (sensors not included).

- Measure up to 11 voltages
- 2 digital outputs for control
- Interface to PC and power via USB
- Detachable screw terminal block
- 10 bit and 12 bit versions available
- Connect up to 4 units to one PC giving 44 sampling channels

SAVE UP TO 20%

Model	USB ADC-11/10	USB ADC-11/12
Channels	11	11
Resolution and Accuracy	10 bit at 1% accuracy	12 bit at 0.5% accuracy
Input Range	0 to 2.5V (unipolar, single ended)	
Sample Rate	20 kS/s	
Digital Outputs	2 channels at 3.3V	
PC Connection	USB 1.1 (USB 2.0 compatible)	
Power Supply	from USB (100mA max.)	
Input Connector	DB25 Female	

524791

Description	Order Code	Price Each 1+
USB ADC-11/10	**107-6335**	£76.00
USB ADC-11/12	**107-6336**	£119.20
ADC-11 Screw Terminal Board	**413-5726**	£12.00

High Resolution Data Loggers

pico

ADC-20 and ADC-24

The ADC-24 and ADC-20 high resolution data loggers offer the ultimate in precise and accurate readings. Features such as true differential inputs, galvanic isolation, and software selectable sample rates all contribute to a superior noise free resolution.The ADC-24 PC Data Logger is equipped with a 24 bit A/D converter, and can maintain an accuracy of 0.1%. The 8 true differential inputs may be configured as 16 single-ended inputs or any combination in between, e.g. 4 differential and 8 single ended.Power and connection to a PC or laptop is via a USB 1.1 or USB 2.0 port. Using the supplied PicoLog software, users can record, monitor and analyse collected data, even exporting to 3rd party applications such as MS Excel.

- Available with 20 or 24 bit resolution, ideal for detecting small signal changes
- Ultra-high accuracy, up to 0.1% of reading
- True differential inputs for excellent noise rejection, also configurable as single-ended
- Up to 7 programmable gain ranges allow compatibility with wide range of sensors and signals
- Galvanic isolation from PC eliminates noise pickup
- 4 bidirectional digital I/O channels
- USB connection and power from PC
- Supplied with PicoLog data logging software and 32-bit programming libraries
- Compatible with Windows 98SE, ME, 2000 and XP

SAVE UP TO 20%

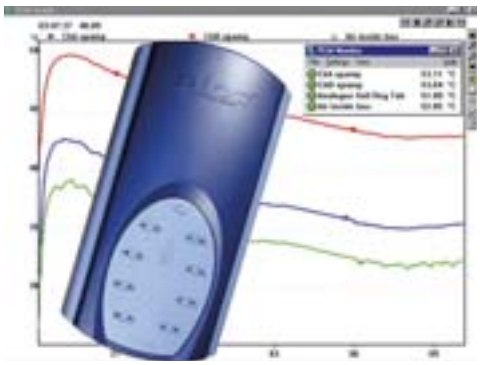
Model	ADC-20	ADC-24
Resolution	20 bits	
Channels	8 single ended / 4 differential	16 single ended / 8 differential
Conversion Time per Channel	660ms, 340ms, 180ms, 100ms, 60ms	
Accuracy	0.2%	0.1% (0.2% using 2.5V input range)
Overload Protection	±30V	
Input Ranges	2: ±2.5V and ±1.25V	7: ±2.5V to ±39mV
Digital I/O	None	4 bi-directional (3.3V CMOS)
Reference Voltage	+2.5V	
PC Connection	USB 1.1 (USB 2.0 compatible)	
Power Supply	from USB	
Input Connector	D25 Female	

524792

Description Part No.	Order Code	Price Each 1+
ADC-20	**107-6338**	£159.20
ADC-24	**107-6339**	£319.20
ADC-20 TERMINAL BOARD	**107-6340**	£20.00

Temperature Datalogger

TC08 USB



An 8 channel, PC based temperature data logger with USB interface. It can measure temperatures from -270°C to +1800°C and works with all popular types of thermocouple (B, E, J, K, N, R, S, T). There is also a 60mV range that can be used for other types of sensor. Supplied with PicoLog software for handling and analysis of all data.

- Measures and records up to 8 thermocouples
- Works with all popukar thermocouple types
- High resolution and accuracy
- Wide temperature range (-270°C to 1800°C)
- Multiple units can be used on the same PC if more than 8 channels are required
- No power supply required
- Built in cold junction compensation
- Supplied with PicoLog data logging software
- USB interface ensures easy installation

SAVE UP TO 20%

Number of channels	8
Accuracy	±(0.3%+0.5°C)
Overload Potection	±10V
Conversion time	200ms for cold junction compensation + 200ms per active channel
Input connectors	Miniature thermocouple
Common mode voltage	±5V max
Output connector	USB1.1 connector cable supplied
Dimensions (WxDxH)	85 x 145 x 25mm
Software (supplied)	PicoLog for Windows (9x,ME,NT,2000,XP)

524793

Mftrs. List No.	Order Code	Price Each 1+
TC08 USB	**782-0178**	£199.00

Bench Power Supply - Variable Voltage

New

- Variable voltage and current
- Switch mode technology for improved operating efficiency
- Low ripple and noise
- Compact ergonomic design occupies a small bench area

Line Regulation	20mV
Load Regulation	50mV
Dimensions / Weight	150 x 70 x 250mm / 2kg

Output Voltage	Output Current	Mftrs. List No.	Order Code
1V - 60V	1.6A	72-8340	157-3426
1V - 36V	3A	72-8345	157-3427
1V - 20V	5A	72-8350	157-3428

524794

Mftrs. List No.	Order Code	Price Each 1+
72-8340	**157-3426**	£79.95
72-8345	**157-3427**	£79.95
72-8350	**157-3428**	£79.95

Bench Power Supply

Single output - 3 voltage / current ranges

New

- Variable voltage and current
- Switch mode technology for improved operating efficiency
- Low ripple and noise
- Compact ergonomic design occupies a small bench area

Range	Output Voltage	Output Current
1	16V	5A
2	27V	3A
3	36V	2.2A

Line Regulation	4mV
Load Regulation	20mV
Ripple and noise (Pk - Pk)	30mV
Dimensions / Weight	127 x 54 x 330mm / 1.9kg
Voltage supply	90V
Frequency supply	47Hz

524795

Mftrs. List No.	Order Code	Price Each 1+
72-8355	**157-3429**	£117.30

3GHz Spectrum Analyser

New

Model: GSP-830

A great value Spectrum Analyser with an outstanding noise floor level that presents extreme sensitivity for picking up weak signals. Further advanced features such as Auto Set, Split Windows, Power measurements and Pass/Fail settings make the GSP-830 an ideal solution for frequency spectrum analysis.

- 6.4" (640 x 480) high resolution colour TFT LCD screen
- 10 markers for peak functions, 5 markers for delta functions
- Split windows allows separate settings
- Users can define their own macros in 10 sequence steps
- Pause, Repeat or Single run modes
- ACPR, OCBW, Channel Power, N -dB, Phase jitter measurement
- Pass/Fail test with limit line editing
- USB and RS232 interface
- Direct VGA output

Frequency Range	9kHz to 3GHz
Sweep Time	50ms to 25.6s
RBW Range	3kHz, 30kHz, 300kHz, 4MHz
Amplitude Measurement	-114dBm to +20dBm
Noise Floor	-117dB @1GHz
Connections	Input: N type 50Ω, Ext Ref: BNC (female)
Dimensions (WxHxD)	330x170x340mm
Weight	6kg

524796

Description	Order Code	Price Each 1+
Spectrum Analyser	**156-3802**	£2,550.00

Digital Bench Multimeters

34410A and 34411A

LATEST PRICING

New

W=261, H=104, D=303mm. Weight 3.72kg

34410A:

- 6½ Digit high-performance multimeters
- 10,000 readings/sec @ 5½ digits direct to PC
- 1,000 readings/sec @ 6½digits direct to PC
- 30 PPM 1 year Basic DC accuracy
- LAN, USB & GPIB standard
- DCV, ACV, DCI, ACI, 2-wire and 4-wire resistance, frequency, period, continuity, and diode test
- Capacitance & temperature measurements
- Expanded measurement ranges
- Data logger with 50 K reading non-volatile memory

34411A Additional Features:

- 50,000 readings/sec @ 4½ digits direct to PC
- 1 Million reading memory
- Analog level triggering
- Programmable Pre/Post triggering

Both models supplied with: Test lead kit with probes and SMT attachments, test report, power cord, USB interface cable, product reference CD-ROM with soft documentation and software

	Ranges	Best Accuracy
AC Voltage	100mV to 750V	±(0.06% of rdg + 0.03% of range)
DC Voltage	100mV, 1V, 10V, 100V, 1000V	±(0.003% of rdg + 0.0005% of range)
AC Current	100µA to 3A	±(0.1% of rdg + 0.04% of range)
DC Current	100µA to 3A	±(0.1% of rdg + 0.04% of range)
Resistance	100R, 1kR, 10kR, 100kR, 1MR, 10MR, 100MR, 1GR	±(0.01% of rdg + 0.001% of range)
Capacitance	1nF, 10nF, 100nF, 1µF, 10µF	±(0.4% of rdg + 0.1% of range)
Temperature	-80 to 150°C	±0.08°C
Frequency	3Hz - 300kHz	±(0.007% of rdg + 0% of range)

Prices where indicated by a ⇵ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524798

Description	Mfrs. List No.	Order Code	Price Each 1+
Bench Multimeter	34410A	**144-0376**	£692.00
Bench Multimeter	34411A	**144-0377**	£1,069.00
Test Lead Set	34138A	**144-0379**	£14.57
			Price Each
Standard Calibration Charge		S C18	£86.25
UKAS Calibration Charge		N C18	£118.84

TRMS Multimeter with USB Interface

TENMA

72-7730

Full function multimeter offers a variety of ranages for every service application, the accuracy of a 19,999 count display, and an optically isolated USB interface, It measures AC/DC voltage, AC/DC current, resistance, capacitance, temperature, frequency and duty cycle. Triple display features 12mm primary digits and dual 6mm secondary displays, plus an analogue bargraph and numerous on screen icons.

- True RMS measurement
- AC+DC measurement
- Selectable auto/manual range
- Data logging and data recall
- Peak hold and Data hold
- Max/min mode and Relative modes
- 4 - 20mA current loop measurement
- Dual level backlit display
- Supplied with 100mm opto-coupled USB cable, Data logging software, Standard test leads, Short clip leads for accurate capacitance measurements, Alligator clip adaptors, 9V battery, Soft case and detailed instruction manual

New

W=93 H=200 D=40mm. Weight 384g

	Range	Accuracy
DC Voltage	200mV, 2V, 20V, 200V, 1000V	±(0.05% + 5d)
AC Voltage	2V, 20V, 200V, 1000V	±(0.6% + 40d)
DC Current	200µA, 2mA, 20mA, 200mA, 10A	±(0.1% + 15d)
AC Current	200µA, 2mA, 20mA, 200mA, 10A	±(1.8% + 15d)
Resistance	200R, 2kR, 20kR, 200kR, 2MR, 20MR	±(0.4% + 20d)
Capacitance	20nF, 200nF, 2µF, 20µF, 200µF, 2mF, 20mF	±(1.2% + 20d)
Temperature	-40°C to 1000°C	±(1.0% + 30d)
Frequency	20Hz, 200Hz, 2kHz, 20kHz, 200kHz, 2MHz, 20MHz, 200MHz	±(0.1% + 15d)
Duty Cycle	10% to 90%	±(1.0% + 30d)
Current Loop	4-20mA displays 0 - 100%	±(1% + 50d)
Input Impedance	10MR (2.5GΩ on 200mV range)	

524800

Mftrs. List No.	Order Code	Price Each 1+	3+
72-7730	**128-3642**	£69.95	£69.25
			Price Each
Standard Calibration Charge		S C4	£34.10
UKAS Calibration Charge		N C4	£56.76

Infrared Non Contact Thermometer

TENMA

New

Range	-32°C to +650°C
Accuracy	±1.8%
Resolution	0.1°C
Repeatability	±0.5%
Emissivity	0.10 to 1.00
Responce Time	250ms
LCD size (WxH)	29x32mm
Dimensions (WxHxD)	53x169x138mm
Weight	270g

Model: 72-823

A general purpose infrared, non-contact thermometer with a wide temperature measurement range. Simply target the unit using the built-in laser pointer and squeeze the trigger to take fast and accurate surface temperature measurements.

- 4 Digit LCD with backlight
- °C/°F measurements
- 20:1 distance to spot ratio
- Max/Min/Dif/Avg temperature display with hold function
- Sleep mode and low battery warning
- USB or 9V battery power
- Tripod mount
- Supplied with 9V battery, carry bag, USB lead and user manual

524801

Description	Order Code	Price Each 1+
Infrared Thermometer	**156-3716**	£45.65

TRMS Multimeter with USB Data Logging

TENMA

Model: Model: 72-7732

A high performance, intelligent multimeter with a USB interface and 9999 record datalogging. The multimeter also has extensive measurement functions, high accuracy and TRMS measurement.

New

- 40,000 count LCD display with bargraph
- Full icon display and dual backlight
- TRMS measurement
- Autoranging / manual range selection
- AC/DC voltage and current measurement
- Resistance and capacitance measurement
- Frequency and duty cycle measurement
- °C/°F temperature measurement (K type probes)
- 4-20mA measurement (0-100%)
- Min/Max/Relative modes
- Data and peak hold
- Continuity buzzer and diode test
- USB interface and datalogging (software supplied)
- Sleep mode and low battery warning
- Supplied with 9V battery, carry bag, USB lead, temperature probe, test leads, test clips and user manual

	Range
DC Voltage	
AC Voltage	
DC / AC Current	
Resistance	400Ω, 4KΩ, 40KΩ, 400KΩ, 4MΩ, 40MΩ
Capacitance	40nF, 400nF, 4 µF, 40(µF, 400µF, 4mF, 40mF
Temperature	
Frequency	40Hz to 400MHz
Data Logging	9999 Records
Input Impedance	10MΩ
Dimensions	93x200x40mm (WxHxD)
Weight	384g

524802

Description	Order Code	Price Each 1+
	156-3719	£101.95

8MHz Handheld Oscilloscope / DMM

New

A compact, handheld oscilloscope and high performance DMM.

- 60mm mono LCD display (160x160 resolution) with backlight
- 3999 count display
- 10 x screen and setup memories
- AC/DC voltage and current measurement
- Resistance, capacitance and frequency measurement
- Continuity buzzer and diode test
- Sleep mode and low battery warning
- USB interface and PC software
- Supplied with test leads, test clips, 4 x AAA batteries, carry bag, USB lead, software, power adaptor and user manual

Bandwidth	DC-8MHz	Vertical Sensitivity	20mV/div to 500V/div
Sampling Rate	40MS/s (real time)MHz	Vertical Accuracy	±(5%+1)
Triggers	Free run, Normal, Single Shot	Horizontal Accuracy	±(0.01%+1)
		Time Base	100ns/div to 5s/div

DC Voltage	400mV, 4V, 40V, 400V, 1000V 4V, 40V, 400V, 750V	**General**	
DC Current	400µA, 4000µA, 40mA, 400mA,	Safety	1000V CAT II, 600V CATIII
AC Current	400µA, 4000µA, 40mA, 400mA,	Dimensions (WxHxD)	100x200x48mm
Resistance	400Ω, 4kΩ, 40kΩ, 400kΩ,	Weight	498g
Capacitance	40nF, 400nF, 4µF, 100µF		
Frequency	10Hz to 10MHz		
Input Impedance	10MΩ		

524803

Description	Order Code	Price Each 1+
Handheld Scope / DMM	**156-3726**	£159.95

Dual Channel Digital Thermometers

TENMA

New

- 4 Digit LCD diplay with dual readings and backlight
- °C/°F/°K measurements
- Dual probe inputs
- K, J, T and E type probe compatibility
- Max/Min/Dif/Avg temperature display with hold function
- Sleep mode and low battery warning
- USB data transfer and datalogging (software supplied)
- USB or 9V battery Power
- Supplied with 9V battery, software, USB lead, K type probe and user manual

72-7715 Additional Features

- Hi/Lo alarm and signal output
- User self-calibration
- Additional R, S and N type probe compatibility

Model
Total Range
Best Accuracy
Resolution
Data Logging
LCD Size (WxH)
Dimensions (WxHxD)
Weight

Models: 72-7712, 72-7715
Dual channel digital thermometers with backlit LCD displays and multiple probe type compatibility.

524805

Mftrs. List No.	Order Code	Price Each 1+
72-7712	**156-3717**	£45.28
72-7715	**156-3718**	£52.75

Autoranging Multimeters

72-7735, 72-7740 and 72-7745

TENMA

H=171, W=86, D=38mm

H=171, W=86, D=38mm

H=171, W=86, D=38mm

Full function multimeters that offer a variety of ranges for every service application. Rugged overmolded housing stands up to the daily rigors of field service use, and large LCD display is easily read from several feet away. Measures AC/DC voltage, AC/DC current, resistance, capacitance, frequency, temperature (72-7740 and 72-7745 only) and duty cycle. 3-3/4 digit, 3999 count display features 3/4" digits and numerous on-screen icons, for easy at-a-glance reading.

SAVE UP TO 30%

- Switchable auto/manual range
- Diode check
- Continuity buzzer
- Data hold
- Full icon display
- Relative mode
- Low battery display
- Included standard test leads, plus separate short leads for accurate capacitance checking
- Comes complete with standard 9V battery and owners manual
- Meets 600V CATIII, and 1000V CATII standards

72-7735 extra features

- RS232C
- Display backlight

72-7740 extra features

- Sleep mode
- Temperature measurement (°C only)
- Thermocouple temperature probe

72-7745 extra features

- True RMS
- RS232C
- Display backlight
- Temperature measurement (°C only)
- Thermocouple temperature probe

	Messbereich	Genauigkeit
DC Voltage	400mV, 4V, 40V, 400V, 1000V	±(0.8%+1)
AC Voltage	4V, 40V, 400V, 750V	±(1%+5)
	400µA, 4000µA, 40mA, 400mA, 4A, 10A	±(1%+2)
AC Strom	400µA, 4000µA, 40mA, 400mA, 4A, 10A	±(1.5%+5)
Widerstand	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ	±(1%+2)
Kapazität	40nF, 400nF, 4µF, 40µF, 100µF	±(3%+5)
Temperatur (72-7740 und 72-7745 nur)	-40°C - 1000°C	±(1%+3)
Frequenz	10Hz - 10MHz	±(0.1%+3)

524806

Mftrs. List No.	Order Code	Price Each 1+
72-7735	**743-0590**	£20.00
72-7740	**743-0604**	£23.20
72-7745	**743-0612**	£31.10

Autoranging Multimeter with RS-232

72-7750

TENMA

H=171, W=86, D=38mm

High accuracy, 5999 count multimeter offers a variety of ranges for every service application, plus an optically isolated RS-232 interface. Rugged overmolded housing stands up to the daily rigors of field service use, and large LCD display is easily read from several feet away. Measures AC/DC voltage, AC/DC current, resistance, capacitance, temperature and frequency. 3-3/4 digit, 5999 count backlit display features 3/4" digits and numerous on-screen icons, for easy at-a-glance reading.

SAVE UP TO 30%

- Switchable auto/manual range
- Diode check
- Continuity buzzer
- Data hold
- Low battery display
- Sleep mode
- Included standard test leads, plus separate short leads for accurate capacitance checking
- Includes 4' opto-coupled RS-232 cable with female DB9 connector and datalogging software
- Comes complete with standard 9V battery and owners manual
- Meets 600V CATIII, and 1000V CATII standards

DC Voltage
Range 600mV, 6V, 60V, 600V, 1000V
Accuracy ±(0.5%+3)
AC Voltage
Range 600mV, 6V, 60V, 600V, 1000V
Accuracy ±(1% +2)
DC Current
Range 60mA, 600mA, 10A
Accuracy ±(1.2%+3)
AC Current
Range 60mA, 600mA, 10A
Accuracy ±(2%+5)
Resistance
Range 600Ω, 6kΩ, 60kΩ, 600kΩ, 6MΩ, 60MΩ
Accuracy ±(1%+2)
Capacitance
Range 6nF, 60nF, 600nF, 6µF, 60µF, 600µF, 6mF
Accuracy ±(3%+5)
Temperature
Range -40°C - 1000°C
Accuracy ±(1%+3)
Frequency
Range 6kHz, 60kHz, 600kHz, 6MHz, 60MHz
Accuracy ±(0.05%+3)
Input Impedance 10MΩ

524807

Mftrs. List No.	Order Code	Price Each 1+
72-7750	**743-0620**	£28.37

Digital Multimeter

72-7925

TENMA

W=83 H=172 D=38mm. Weight 310g

AC Voltage
Range 2V/20V/200V/750V
Accuracy ±(0.8% + 3)
DC Voltage
Range 200mV/2V/20V/200V/1000V
Accuracy ±(0.5% + 1)
AC Current
Range 2mA/200mA/20A
Accuracy ±(1% + 3)
DC Current
Range 2mA/200mA/20A
Accuracy ±(0.8% + 1)
Resistance
Range 200Ω/2kΩ/20kΩ/2MΩ/20MΩ
Accuracy ±(0.8% + 10)
Capacitance
Range 2nF/200nF/20µF
Accuracy ±(4% + 3)
Temperature
Range -40 to +1800°F
Accuracy ±(2% + 8)
Frequency
Range 2kHz/20kHz
Accuracy ±(1.5% + 5)
General
Power 9V Battery (6F22)

SAVE UP TO 30%

- 1999 digit display
- AC/DC voltage measurement
- AC/DC current measurement
- Resistance measurement
- Capacitance measurement
- Temperature measurement (°F only)
- Frequency measurement
- Diode measurement
- Continuity buzzer
- Transistor
- Sleep mode
- Low battery display
- Meets the **IEC1010 CAT II 600V** safety standard

Supplied with: test lead, battery, manual, point contact temperature probe, holster.

524808

Description	Mftrs. List No.	Order Code	Price Each 1+
Digital Multimeter	72-7925	**918-3663**	£14.10
			Price Each
Standard Calibration Charge		**S** C3	£28.38
UKAS Calibration Charge		**N** C3	£56.76

Digital Multimeter

72-7930

W=88 H=179 D=39mm. Weight 62g

AC Voltage
Range 2V/20V/200V/1000V
Accuracy ±(0.8% + 3)

DC Voltage
Range 200mV/2V/20V/200V/1000V
Accuracy ±(0.5% + 1)

AC Current
Range 2mA/200mA/20A
Accuracy ±(1% + 3)

DC Current
Range 2mA/200mA/20A
Accuracy ±(0.8% + 1)

Resistance
Range 200Ω/2kΩ/20kΩ/2MΩ/20MΩ
Accuracy ±(0.8% + 1)

Capacitance
Range 2nF/200nF/100µF
Accuracy ±(4% + 3)

Temperature
Range -40 to 538°C
Accuracy ±(1% + 3)

Frequency
Range 2kHz/20kHz
Accuracy ±(1.5% + 5)

General
Power 9V Battery (6F22)

SAVE UP TO 30%

- 1999 digit display
- AC/DC voltage measurement
- AC/DC current measurement
- Resistance measurement
- Capacitance measurement
- Temperature measurement (°F only)
- Frequency measurement
- Diode test
- Continuity buzzer
- Transistor
- Data hold
- Full icon display
- Sleep mode
- Low battery display
- Meets **IEC1010** safety standards **CAT III 600V** and **CAT II 1000V**

Supplied with: test lead, battery, manual, test clip, multi-purpose socket, holster.

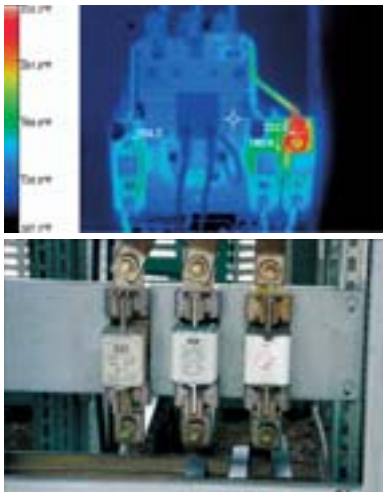
524809

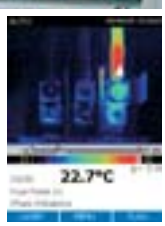
Description	Mftrs. List No.	Order Code	Price Each 1+
Digital Multimeter	72-7930.1	**918-3655**	£17.70
			Price Each
Standard Calibration Charge		S C3	£28.38
UKAS Calibration Charge		N C3	£56.76

Thermal Imager

Ti20

W=102 H=254 D=178mm.
Weight 1.2kg





Representing a price/performance breakthrough in thermal imaging, the Fluke Ti20 lowers the entry threshold for this powerful technology. Designed for industrial applications, the Ti20 puts the capabilities of thermal imaging within the hands of service and maintenance personnel who know the facility and equipment best.

- Fully radiometric for detailed temperature analysis and tracking of critical components
- Complete solution with InsideIR software for analysis, reporting and routing
- Large colour LCD displays uncluttered image with data and routing instructions
- Uses revolutionary detector technology to provide a clear thermal image while accurately measuring the temperature
- Measures up to 350°C to cover a broad range of industrial applications
- Protected against dust and moisture (IP54 rated) to withstand harsh industrial environments
- Provides 3 hours continuous operation per battery charge
- Facilitates one-handed point-, shoot- and image capture operation
- Assists fast inspections with clear on-screen step-by-step routing instructions
- Comes complete with all necessary accessories and professional application training material to ensure a fast return on investment

Typical Applications
Electrical power distribution systems: three-phase systems, distribution panels, fuses, wiring and connections
Electro-mechanical equipment: motors, pumps, bearing and gear boxes
Process instrumentation: process control equipment, pipes, valves, steam traps and vessels
Facility maintenance: HVAC systems, buildings and roofs
An overheated motor may be an indication of electrical power problems, an underrated motor or insufficient cooling. Temperature differences between phases may indicate unbalanced loads, harmonics, component problems, bad connections or bad wiring. Ball bearings running hot are an early indication of upcoming failure. Monitoring process installations is made easy using thermal imaging.

Powerful InsideIR Software
The Fluke Ti20 comes with the powerful InsideIR software for storing and analyzing thermal images and creating professional reports. The software makes it possible to adjust key parameters in a stored image downloaded from the camera such as emissivity, reflected temperature compensation, level, gain, and colour palette in the comfort, quiet and safety of the office. This not only improves inspection safety and convenience, but also makes it unnecessary to re-scan equipment if different settings are desired in a previously captured thermal image.

Fluke Ti20 Thermal Imager includes:
InsideIR software, USB cable, AC power adapter, 2x recharcheable battery packs, 1x AA battery case, hard case, soft case, wrist strap, printed "Getting Started" guide and manual on CD.

Thermal Specifications

Temperature Range	-10°C to 350°C
Detector Type	128 x 96 thermal element focal plane array
Accuracy	±2% or ±2°C (whichever is greater)
Repeatability	±1% or ±1°C (whichever is greater)
Resolution	0.1°C

SAVE UP TO 20%

Optical/IR Specifications

Spectral Range	7.5 - 14 microns
Target Sighting	Single laser dot
Optical Resolution	75:1
Image Frame Rate	9 Hz
Field of View	20° Horizontal and 15° Vertical
Palettes	Grey, Reverse Greyscale, Ironbow or Rainbow.
Adjustable Emissivity	0.10 to 1.00 in 0.01 increments

Electrical Specifications

Power	Rechargeable battery pack giving 3 hours continuous use
Supported OS	Windows 2000 and Windows XP
Data Transfer	USB - 25s to transfer 50 frames
Storage	Flash memory - capacity of 50 images

Prices where indicated by a ⇵ are subject to change. Please call your local sales office or visit www.farnellinone.com for the latest prices.

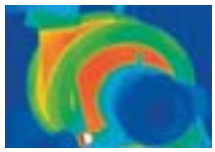
524810

Description	Mftrs. List No.	Order Code	Price Each 1+
Thermal Imager	TI20	**122-5564**	£3,549.60

Thermal Imager

Ti10 & Ti25

The Ultimate Tools for Troubleshooting and Maintenance!



CALIBRATION SERVICES

New

SAVE UP TO 10%

LATEST PRICING

The Fluke Ti25 and Ti10 are the perfect tools to add to your problem solving arsenal. Built for tough work environments, these high-performance, fully radiometric images are ideal for troubleshooting electrical installations, electro-mechanical equipment, process instrumentation, HVAC equipment and others.
New IR-Fusion™ Technology, combines both visual and infrared images at the same time, making the images easier to understand.

- Engineered and tested to withstand a 2 meter drop, when was the last time you dropped a tool?
- Withstands dust and water-tested to an IP54 rating
- Innovative protective lens cover protects the lens when not in use. The cover is securely attached and out of the way while images are being taken.
- Works in ambient temperatures as low as -10 °C and high as +50 °C
- Delivers the clear, crisp images needed to find problems fast
- Identify even small temperature differences that could indicate problems with excellent thermal sensitivity (NETD)
- High performance, low noise sensor provides high quality image and stable temperature reading
- Even the smallest details become visible with the large, widescreen full VGA color LCD display

- Intuitive, three-button menu is easy to use... simply navigate with the push of a thumb.
- No need to carry pen and paper, record findings by speaking into the camera. Voice annotations can be recorded with every image you take. Voice comments are saved along with individual images for future reference (Ti25 only)
- Store more than 3,000 screen images
- (.bmp format) for easy reporting direct into Microsoft Word™ and other programs or 1,200 IR-Fusion images, including thermal image, visual image, temperature data and voice recorded comments for reporting and analysis purpose. Data is stored on included 2 GB SD memory card.

Fluke SmartView™ software is included with each Fluke thermal imager.

- Powerful, modular suite of software tools for viewing, annotating, editing and analyzing of infrared images.
- Generate customizable, professional-looking reports in a few easy steps.
- Full support of IR-Fusion Technology lets you edit images in five viewing modes.

Compatability: Windows® 2000 SP4 with update rollup 1/XP SP2/Vista

	Ti25	Ti10
Infra Red Performance		
Thermal sensitivity @ 30°C	≤ 0.1°C (100mK)	≤ 0.2°C (200mK)
Minimum span (Auto/Manual)	5 °C / 2.5 °C	10 °C / 5 °C
Picture in Picture Modes	Blending-Min, Mid, & Max	Standard
Measurement range	-20 °C to 350 °C, 2 ranges	-20 °C to 250 °C
Accuracy	± 2 °C or 2% (whichever is greater)	± 5°C or 5% (whichever is greater)
Markers	Centre, Hot & Cold	Centre
Voice memo recorder	✓	—
Protection	IP54	IP54
Field of view	23° Horizontal x 17° Vertical	
Spatial resolution	2.5 mrad	
Minimum focus distance	15cm	

Prices where indicated by a ⇅ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524811

Mftrs. List No.	Order Code	Price Each 1+
TI25	155-3576	£4,032.00
TI10	155-3577	£2,687.00
Accessories		
TI-CAR CHARGER	155-3578	£84.00
Standard Calibration Charge	S C8	£45.13
UKAS Calibration Charge	N C8	£71.21

Digital Logging Multimeters

Fluke 287 & Fluke 289

High performance industrial logging multimeters. Log data and display it graphically on the large display.

LATEST PRICING

H=254 W=194 D=76mm. Weight 1kg

- Large 50,000 count 320x240 dot matrix display
- Logging function with TrendCapture for easy review of logged data
- Multiple readings per display
- True RMS measurements (AC and AC+DC)
- Info button for convenient on-board help
- Optical USB Communications interface for easy data transfer
- Internal memory allows up to 180 hours of logging
- Current measurement to 20A (30 seconds), 10A continuous
- Peak capture (records transients as fast as 250µs
- Min/Max and Average functions with Time Stamp
- Protected to IP54
- All inputs are protected to **EN61010-1 CAT III 1000V / CAT IV 600V**
- **UL**, **CSA** and **TUV** listed

SAVE UP TO 15%

Fluke 289 Additional Features:

- Low pass filter for motor drive measurements
- Low impedance function prevents false "ghost voltage" readings
- 50Ω range for motor winding and low ohm measurements

Function	Measuring Ranges	Resolution	Accuracy
VDC	1000V	1µV	±(0.025%+5d)
VAC	1000V	1µV	±(0.4%+40d)
ADC	10A	0.01µA	±(0.15%+2d)
AAC	10A	0.01µA	±(0.7%+5d)
Resistance	500MR	0.01Ω	±(0.05%+2d)
Conductance	50nS	0.01nS	±(1.0%+10d)
Capacitance	100mF	0.001nF	±(1.0%+5d)
Frequency	1MHz	0.01Hz	±(0.005%+1d)
Temperature	-200°C to 1350°C°C	0.1°C	(1% + 1°C)

Accuracies are best accuracies for each function.
Supplied with TL71 silicone test leads, probe holder, 6x AA batteries (installed) and manual

289FVF - FlukeView Combo Kit: contains Fluke 289 and accessories as above plus; alligator clips, 80BK thermocouple, FlukeView forms software, data cable and a soft carry case.

TLK287 Test Lead Kit is designed for electronics designers, test and service technicians. The kit includes: spring tipped probes, micro-grabbers, mini alligator clips, leads and couplers.

TLK289 Test Lead Kit is designed for high-end industrial users. The kit includes: SureGrip alligator clips, SureGrip grabbers, SureGrip hook clips, Suregrip industrial test probes, magnetic hanger, temperature adaptor with K-type thermocouple, soft carry case. Rated to 1000V CAT III.

Prices where indicated by a ⇅ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524812

Description	Mftrs. List No.	Order Code	Price Each 1+	3+
Multimeter	287	142-2691	£313.65	£310.51
Multimeter	289	142-2692	£299.00	£296.01
FlukeView Combo Kit	289/FVF	142-2693	£390.00	£386.10
Test Lead Kit	TLK287	150-3745	£97.00	£94.09
Test Lead Kit	TLK289	150-3746	£97.00	£94.09
			Price Each	
Standard Calibration Charge		S C4	£34.10	
UKAS Calibration Charge		N C4	£56.76	

Digital Multimeter

80 Series V

The new Fluke 80 Series V has improved measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, in plant automation, power distribution, and electro-mechanical equipment. The 80 Series V operates very similar to the classic 80 Series, but with more problem solving power, safety, convenience and impact protection.

LATEST PRICING

- True-RMS voltage and current for accurate measurements on non linear signals
- Large display with analog bargraph and 2 level bright white backlight
- Auto and manual ranging for maximum flexibility
- Relative mode to remove test lead resistance from low ohms measurements
- Min-Max-Average recording with Min/Max Alert to capture variations automatically
- Touch Hold to capture stable readings avoiding noisy signals
- Audible continuity, diode test and duty cycle
- Input Alert
- Classic design with new removable holster with built in test lead and probe storage
- Improved selectable sleep mode for long battery life
- Easy battery and fuse exchange without opening the complete case

87V extra features:

- Selectable filter for accurate voltage and frequency measurements on motor drives
- Built-in thermometer
- Peak capture to record transients as fast as 250µs

Fluke 87V/E Industrial Electrician Combo Kit includes:

- 0.5 m heat resistant silicone test leads
- Removeable test probes with 4mm of exposed metal for use on industrial circuits
- Retractable long reach alligator clips
- Magnetic hanger to position and hold meter to steel surfaces
- Temperature probe
- Durable carrying case

SAVE UP TO 15%

H80M Holster

- Yellow holster for all 80 series DMMs (new as well as old)
- Hanging magnet
- Hook and loop straps
- General purpose hanger

		83V		87V	
Functions	**Maximum range**	**Max resolution**	**Accuracy**	**Max resolution**	**Accuracy**
Voltage DC	1000V	0.1mV	±(0.1%+1)	10µV	±(0.05%+1)
Voltage AC	1000V	0.1mV	±(0.5%+2)	10µV	±(0.7%+2)
Current DC	10A	0.1µV	±(0.4%+2)	0.01µ	±(0.2%+2)
Current AC	10A	0.1µV	±(1.2%+2)	0.01µ	±(1.0%+2)
Resistance	50MΩ	0.1Ω	±(0.4%+1)	0.01Ω	±(0.2%+1)

Functions	Maximum range	83V Max resolution	83V Accuracy	87V Max resolution	87V Accuracy
Conductance	60nS	0.01nS	±(1.0%+10)	0.001nS	±(1%+10)
Capacitance	9999µF	0.01nF	±(1.0%+2)	0.01nF	±(1%+2)
Frequency	>200kHz	0.01Hz	±(0.005%+1)	0.01Hz	±(0.005%+1)
Temperature	-200 to 1090°C			0.1°C	1.0%
80BK temperature probe	-40 to 260°C				2.2°C or 2%

Prices where indicated by a ↕ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524963

Mftrs. List No.	Order Code	Price Each 1+	Price Each 3+
83V	**736-3486**	£224.00	£221.76
87V	**736-3494**	£274.00	£271.26
87V/E2 Kit	**127-2833**	£310.00	£306.90
H80M Holster	**800-2223**	£23.00	£22.31
C101 Carry Case	**947-9783**	£34.00	£32.98
			Price Each
Standard Calibration Charge		S C4	£34.10
UKAS Calibration Charge		N C4	£56.76

Digital Multimeters

FLUKE

170 Series

H=183, W=90, D=43

SAVE UP TO 10%

The three models of the new 170 Series are the new benchmarks for the general-pupose multimeters. The three models: the 175, 177 and the 179 set the standard with a combination of precision, features, ease-of-use, safety and reliability.
All models offer true RMS AC voltage and current readings, 6000-count resolution, min-max-average recording, as well as frequency and capacitance ranges. Despite all of these and many other useful features, the 170 Series remains easy to use. The ergonomic case with integrated holster protects the units in rough and tough environments. To change the batteries, the case does not have to be opened as access to the batteries is through an easy to open battery door. All inputs are protected to **EN61010-1 CAT IV 600V/CAT 111 1000V.**The Fluke 170 Series is supplied with TL75 test leads, installed 9V battery and user manual and comes with Fluke's unique lifetime warranty.

Features	175	177	179
True-rms measurements	AC	AC	AC
Digital display counts, updates 4 times per second	6000	6000	6000
Display backlight		●	●
Analog bargraph/segments, updates 40 times per second	33-segments	33-segments	33-segments
Auto and manual ranging	●	●	●
Display hold and auto hold	●	●	●
Min-max-average recording mode with min/max alert	●	●	●
Temperature readings (bead thermocouple probe included)			●
Smoothing mode allows filtering of rapidly changing inputs	●	●	●
Audible continuity and diode test	●	●	●
Test lead alert warns for improper connection of test leads	●	●	●
Unsafe voltage alert warns for voltages above 30V	●	●	●
Low battery indication	●	●	●
Ergonomic case with integrated holster	●	●	●
Easy battery exchange without opening the complete case	●	●	●
Selectable sleep mode preserves battery life	●	●	●
Warranty	Lifetime	Lifetime	Lifetime
EN 61010-1 safety rating on all inputs	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V

Accuracies are best accuracies for each function

Battery life	Alkaline, 200 hrs typical
Weight	420g
Warranty	Lifetime

LATEST PRICING

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524814

Mftrs. List No.	Order Code	Price Each 1+	Price Each 2+
FLUKE 175	**355-8678**	£155.00	£153.45
FLUKE 177	**355-8680**	£179.00	£177.21
FLUKE 179	**355-8691**	£198.00	£196.02
C101 Carry Case	**947-9783**	£34.00	£32.98
			Price Each
Standard Calibration Charge		S C3	£28.38
UKAS Calibration Charge		N C3	£56.76

Infrared Thermometers

FLUKE

60 Series

LATEST PRICING

W=160 H=200 D=55mm. Weight 320g

The Fluke 60 Series non-contact thermometers are the ideal professional diagnostic tools for quick and accurate temperature measurements. Ideal for measuring surface temperatures of rotating, hard-to-reach, electricity live or dangerously hot targets like electrical motors and -panels, and heating and ventilation systems. Laser sighting system guides measurements to the right target and in less than a second, the large temperature display provides a readout of the surface temperature.

- Laser guided sighting system for easy targeting with 1% accuracy
- Up to 12 points datalogging with min, max and average functions
- Up to 50:1 optical resolution
- Choice between models with fixed or adjustable emissivity
- Backlit display for easy reading in the dark
- Temperatures up to 760°C

SAVE UP TO 15%

	63	66	68
Form factor	Pistol grip	Pistol grip	Pistol grip
Temperature range	-32 to 535°C	-32 to 600°C	-32 to 760°C
Optical resolution	12:1	30:1	50:1
Laser beam	●	●	●
Backlit LCD display	●	●	●
Selectable °C or °F	●	●	●
MIN/MAX/AVG/DIF	MAX only	●	●
Datalogging		●	●
Hi/Lo Alarm		●	●
Adjustable emissivity		●	●

	63	66	68
Response time	≤0.5 secs	≤0.5 secs	≤0.5 secs
Resolution	0.2°C	0.1°C	0.1°C
Repeatability	±0.5% or ≤ ±1°C	±0.5% or ≤ ±1°C	±0.5% or ≤ ±1°C
Accuracy			
< 26°C:	±3°C	±3°C	±3°C
-26 to -18°C:	±2.5°C	±2.5°C	±2.5°C
-18 to 23°C:	±2°C	±2°C	±2°C
23 to 510°C:	±1% of reading or ±1°C	±1% of reading or ±1°C	±1% of reading or ±1°C
> 510°C:	±1.5% of reading	±1% of reading or ±1°C	±1% of reading or ±1°C
Distance to target	Up to 2m	5m	8m
Emissivity	Fixed at 0.95	0.1 to 1.0 by 0.01 steps	0.1 to 1.0 by 0.01 steps

Prices where indicated by a ↕ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524817

Description	Mftrs List No.	Order Code	Price Each 1+
IR Thermometer 535°C	63	**921-0083**	£134.00
IR Thermometer 600°C	66	**921-0091**	£232.00
IR Thermometer 760°C	68	**921-0105**	£299.00
HOLSTER	H6	**828-3931**	£16.00
CASE, HARD	C101	**947-9783**	£34.00
			Price Each
Standard Calibration Charge		S C4	£34.10

Fluke 113 Digital Multimeter

FLUKE

The new 113 Digital Multimeter has the features needed to repair most electrical problems. This meter is simple to use. With features such as VCHEK™, from Fluke, which includes added measurement functions, backlight, conformance to the latest safety standards, and a much larger display that's easier to view, this new meter is a must-have for the utility user's toolbox.

SAVE UP TO 10%

Fluke 113 Digital Meter Includes:
Fluke 113 digital multimeter
TL75 test leads
One 9V battery
Printed user manual

L=167.1, W=85.1, D=46, Weight=404g

- VCHEK™ LoZ low impedance measurement function to simultaneously test for voltage or continuity
- True-rms for accurate ac measurements on non-linear loads
- A large backlit display allows for easy visibility in low-lit areas
- Record signal fluctuations using the min / max function
- Diode test for testing general-purpose germanium, silicon, and power diodes
- Integral holster with probe holders for easy storage
- Auto and Manual ranging for added user functionality
- Meets Measurement Category CAT III 600V and Category IV 300V standards for a higher level of safety
- The optional TPAK magnetic hanger allows the user hands-free flexibility

Measuring Range		Resolution		Temperature	
Capacitance	1μF to 999μF	Capacitance	1μF to 1nF	Operating Range	-10°C to +50°C
Resistance	600R to 60kR	Resistance	0.01R to 0.1R	Storage Range	-40°C to +60°C
Voltage	6V to 600V	Voltage	0.001V to 0.1V		
Test Diode Range	2V				

Maximum Voltage	600V
Display	3 3/4-digits, 6000 counts, updates 4/sec
Relative Humidity	95 % to 30 °C, 75 % to 40 °C, 45 % to 50 °C
Battery Type	9 Volt Alkaline, ANSI 1604A / IEC 6F22
Battery Life	Alkaline: 300 hours typical, without backlight
Shock	1 Meter drop per IEC 61010-1-2001
Vibration	Per MIL-PRF-28800 for Class 2 instrument
Safety	UL 61010-1 (2004) and IEC/EN 61010-1 2nd Edition for measurement Category III, 600 V, EMC EN61326-1.

* Between any terminal and earth ground

524818

Mftrs. List No.	Order Code	Price Each 1+
FLUKE 113	**157-8321**	£84.00
Accessories		
TL223.. Test Lead Set	**431-4219**	£41.00
C50 Case	**424-006**	£22.00
TPAK Magnetic Hanger	**302-9578**	£22.00

TRMS Digital Multimeters

114 and 115

W=84 H=167 D=46mm. Weight 550g

The **114 Electrical Multimeter** is ideal for electrical troubleshooting and straightforward "go/no-go" testing in residential/commercial electrical testing. It has all the basic functions plus a special feature to prevent false readings caused by ghost voltage.

The **115 Field Service Multimeter** is optimised for electrical and electronic testing in field service, industrial, and applications where more than basic functionality (such as measurement of ac/dc current) simplifies working.

- True RMS AC measurements
- Large 6000 count display with white LED backlight
- Analogue bargraph
- Auto/Manual ranging
- MIN/MAX/AVG functions
- Data Hold
- Low battery indication
- Compact case with removable holster
- CAT III 600 V
- 400 hours operation from supplied 9V alkaline battery
- Supplied with user manual and TL75 test leads

Feature	114	115
AutoVolt: automatic ac/dc selection	●	
LoZ: low input impedance to prevent ghost voltages	●	
AC/DC Voltage Measurements	●	●
AC/DC Current Measurements		●
Resistance / Continuity	●	●
Frequency and Capacitance		●
Diode Test		●

	Maximum	Max. Resolution	Best Accuracy 114	Best Accuracy 115
DC Voltage	600V	1mV	±(0.5%+2)	±(0.5%+2)
AC Voltage	600V	1mV	±(1.0%+3)	±(1.0%+3)
DC Current	10A	1mA		±(1.0%+3)
AC Current	10A	10mA		±(1.5%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)	±(0.9%+1)
Capacitance	10mF	1nF		±(1.9%+2)
Frequency	50kHz	0.01Hz		±(0.1%+2)

Prices where indicated by a ⇅ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524819

Description	Mfrs. List No.	Order Code	Price Each 1+
TRMS DMM	114	**127-4598**	£90.00
TRMS DMM	115	**127-4599**	£104.00
Accessories			
Carry Case	C50	**424-006**	£22.00
Magnetic Hanger	TPAK	**302-9578**	£22.00
Test Lead Set	TL223..	**431-4219**	£41.00
			Price Each
Standard Calibration Charge		**S** C4	£34.10
UKAS Calibration Charge		**N** C4	£56.76

Digital Multimeter with non-contact voltage

117

The ideal meter for demanding settings like commercial buildings, hospitals and schools. The compact design makes it easy to hold and use one-handed. Integrated VoltAlert™ Technology allows testing for non-contact voltage directly from the meter to help get the job done faster.

W=84 H=167 D=46mm. Weight 550g

- True RMS AC measurements
- Large 6000 count display with white LED backlight
- Analogue bargraph
- VoltAlert™ Technology for integrated non-contact voltage detection
- Current measurement 20A (30 seconds momentary; 10A continuous)
- Resistance, continuity, frequency and capacitance measurements
- LoZ: low input impedance to eliminate ghost (stray) voltage to make more accurate measurements
- AutoVolt: automatic ac/dc selection
- Auto/Manual ranging
- MIN/MAX/AVG functions
- Data Hold
- Low battery indication
- Diode Test
- Compact case with removable holster
- CAT III 600 V
- 400 hours operation from supplied 9V alkaline battery
- Supplied with user manual and TL75 test leads

The **Electrician's Combo kit** (117/322) pairs the new Fluke 117 DMM with a Fluke 322 clamp meter and is the perfect solution to meet the demands of Electrical Professionals. The combo kit includes:

- 117 True-rms digital multimeter with non-contact voltage detection
- 322 Compact clamp meter (600V ac/dc, 400A ac, 400Ω
- 4 mm lantern tip probe and test lead set
- ToolPak Magnetic Meter Hanging Strap
- C115 Deluxe carrying case with shoulder strap

	Maximum	Max. Resolution	Best Accuracy
DC Voltage	600V	1mV	±(0.5%+2)
AC Voltage	600V	1mV	±(1.0%+3)
DC Current	10A	1mA	±(1.0%+3)
AC Current	10A	10mA	±(1.5%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)
Capacitance	10mF	1nF	±(1.9%+2)
Frequency	50kHz	0.01Hz	±(0.1%+2)

Prices where indicated by a ⇅ are subject to change. Please call your local sales office or visit www.farnell.com for the latest prices.

524822

Description	Mfrs. List No.	Order Code	Price Each 1+
Multimeter	117	**127-4602**	£130.00
Combo Kit	117/322 KIT	**127-4603**	£187.00
Accessories			
Carry Case	C50	**424-006**	£22.00
Magnetic Hanger	TPAK	**302-9578**	£22.00
Test Lead Set	TL223..	**431-4219**	£41.00
			Price Each
Standard Calibration Charge		**S** C4	£34.10
UKAS Calibration Charge		**N** C4	£56.76

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FLUKE

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